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## The impact of advancing age on total serum IgE in asthmatic patient

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### الخلاصة

تم تصميم الدراسة الحالية لتقييم تاثير التقدم بالسن على مستوى الكلوبين المناعي ( IgE ) في المرضى المصابين بالربو. لتحقيق هذا الغرض, تم دراسة 90 مصابا بالربو و 30 شخصا صحيحا استعملوا بوصفهم مجموعة سيطرة. تم تقسيم المرضى الى 4 مجاميع تضمنت مجموعة A ( 9 ) تتراوح اعمارهم من 20 الى 30 سنة وتألقت مجموعة B ( 13 ) تتراوح اعمارهم اكبر من 30 الى 40 سنة ومجموعة C ( 23 ) تتراوح اعمارهم اكبر من 40 الى 50 سنة وتكونت مجموعة D ( 45 ) اعمارهم اكثر من 50 سنة. دلت النتائج على زيادة معنوية في مستوى IgE في مجموعة D عند مقارنتها مع مثيلاتها في مجموعتي A و B. بين تحليل الارتباط الخطي علاقات ارتباطية معنوية بين مستوى IgE (  $r = -0.65, P < 0.001$  ) و اعمار مرضى الربو لكن ليس لدى الشخاص الأصحاء.

### Abstract

The current study was conducted to assess the effect of advancing age on total serum IgE level in asthmatic patients. To this purpose, 90 asthmatic patients and 30 healthy individuals ( control group ) were enrolled. Asthmatic patients were categorized into four groups. Group A consisted of asthmatic patients (9) whose age was more than 20 and up to 30 y. Group B contained asthmatics (13) of age more than 30 and up to 40 y. Group C comprised those (23) of more than 40 and up to

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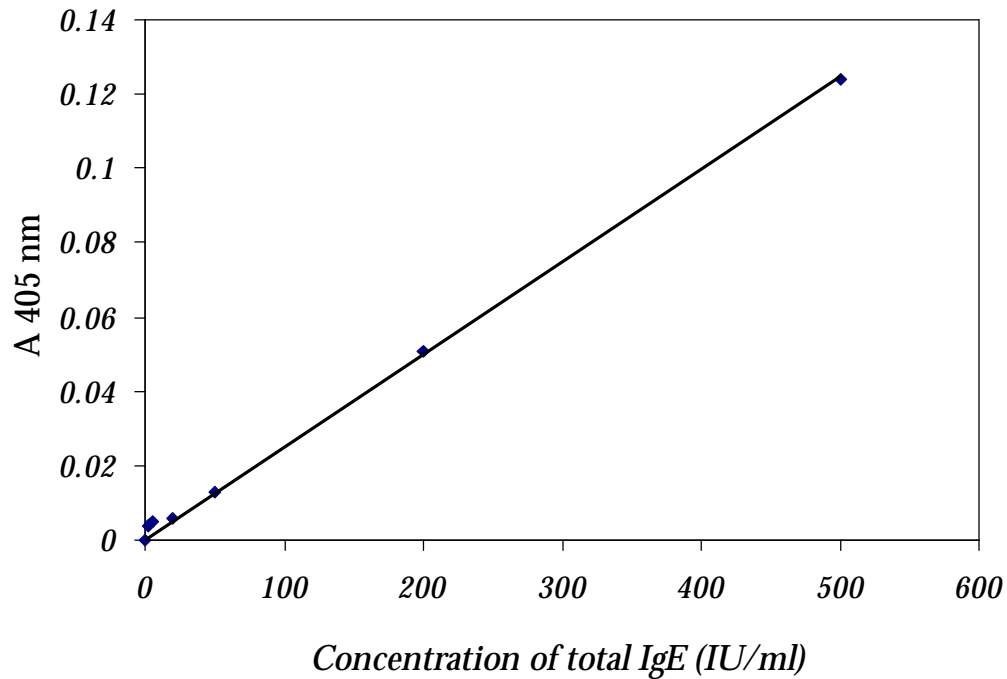
50 y. Group D consisted asthmatic patients (45) of age more than 50 y. Total serum IgE level significantly changed in group D patients when compared with those of groups A and B. The linear regression analysis exhibited significant correlations for IgE ( $r=-0.65$ ,  $P<0.001$ ) with ages in asthmatic patients but not in healthy individuals.

*Introduction:*

Asthma can develop at any age but it's the most common chronic disease among children and the fifth most common among adults [1-3]. Generally, IgE is a member of Immunoglobulin family of proteins. It's produced by plasma cells in response to antigenic stimuli [4]. Measurement of total serum IgE is often used as a tool in the diagnosis and management of an atopic disease such as asthma [5, 6]. The concentration of IgE in serum is the lowest of the five human immunoglobulin isotypes (IgG, IgA, IgM, IgE, and IgD) and is highly age dependent [7,8,9, 10]

*Methods:*

Total serum IgE level was estimated by an enzyme linked immunosorbent assay (ELISA). The results were calculated by interpolation from standard curve that is performed in the same assay as that of the sample. The average absorbance for each sample on vertical axis was located and the corresponding IgE concentration on the horizontal axis was read [11, 12].



Statistical analysis:

Statistical analysis was done by using **SPSS** version 10 computer software (Statistical Package for Social Sciences). Results were expressed as mean  $\pm$ , standard deviation (SD), and analyzed by the use of one – way ANOVA (Kruskal – Wallis test, for the difference in mean between more than two groups). Correlation coefficient of variables was estimated by Pearson's t –test. Significance was defined as  $P < 0.05$ , in confidential interval 95 %.

Results and Discussion:

To determine the effect of age on the Total serum IgE level, asthmatic patients were categorized into four groups. Group A consisted of asthmatic patients (9) whose age was more than 20 and up to 30 y. Group B contained asthmatics (13) of age more than 30 and up to 40 y. Group C comprised those (23) of more than 40 and up to 50 y.

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Group D consisted asthmatic patients (45) of age more than 50 y (table 1). The results of total serum IgE level, was evaluated by using the ANOVA analysis.

Total serum IgE level significantly changed in group D patients (geriatrics) when compared with those of groups A and B, and somewhat less in comparison with those of group C (Table 2). The linear regression analysis revealed significant correlation for IgE( $r = -0.65$ ,  $p < 0.001$ ) level with age of asthmatic patients. Such correlation was not observed for the level IgE in the control group (Table 3 and Fig 1).

Biochemical studies have shown that several biochemical constituents are affected by the age of the individuals [13]. IgE has been reported to be influenced by age [14]. In the present study, IgE level was found to be independent on age in the normal subjects. The interesting observations were the significant correlation of IgE level with the age in asthmatics but not in normal individuals. The reason may be the impaired functions of T-cells that are observed in elderly patients. Thus, these cells regulate the production of total serum IgE from B-cells. Consequently, IgE formation is impaired [15-17].

*Table(1): Impact of age on Total serum IgE in asthmatic patients.*

<i>Parameter</i>	<i>Group</i>	<i>Mean ± SD</i>	<i>Range</i>
<b>IgE (IU/ml)</b>	<b>&gt;20-30 y</b>	<b>486 ± 97.2</b>	<b>375-672</b>
	<b>&gt;30-40 y</b>	<b>386 ±73.34</b>	<b>375-490</b>
	<b>&gt;40-50 y</b>	<b>330 ±66</b>	<b>195 -450</b>
	<b>&gt;50 y</b>	<b>227 ±45.40</b>	<b>95-375</b>

*Table (2): Univariate analysis of age relationship with Total serum IgE in asthmatic patients.*

<b>Age</b>	<b>IgE</b>
<b>A-B</b>	<b>N.S</b>
<b>A-C</b>	<b>&lt;0.05</b>
<b>A-D</b>	<b>&lt;0.001</b>
<b>B- C</b>	<b>N.S</b>
<b>B-D</b>	<b>&lt;0.01</b>
<b>C -D</b>	<b>&lt;0.05</b>

*Table (3): The correlation of Total serum IgE levels with ages of asthmatic patients and control group.*

<b>Parameter</b>	<b>Asthmatic patients</b>		<b>Control group</b>	
	<b>r</b>	<b>P-value</b>	<b>r</b>	<b>P-value</b>
<b>IgE</b>	<b>- 0.65</b>	<b>P &lt; 0.001</b>	<b>0.01</b>	<b>N.S</b>

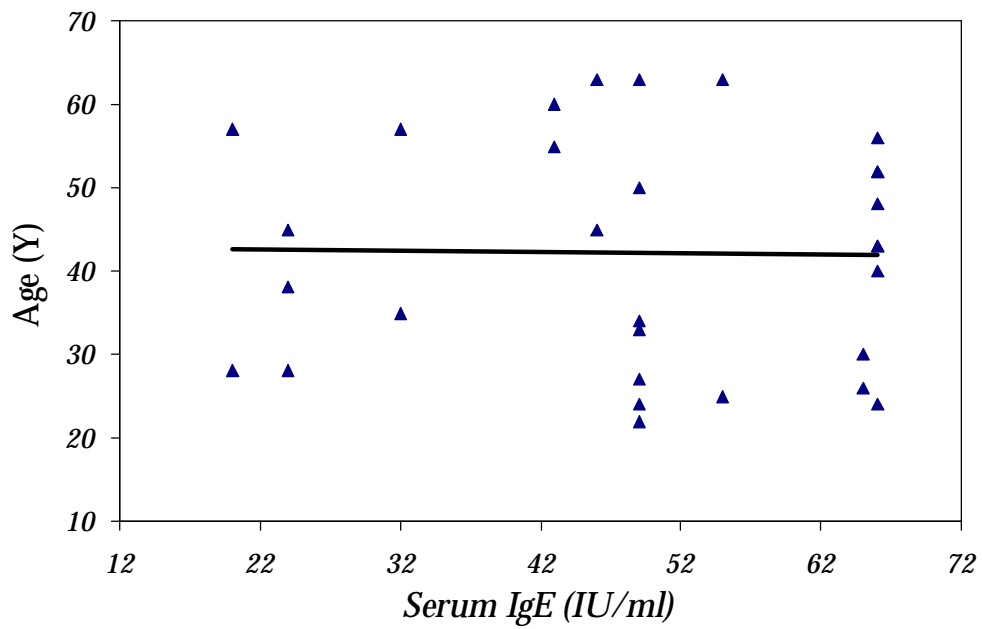
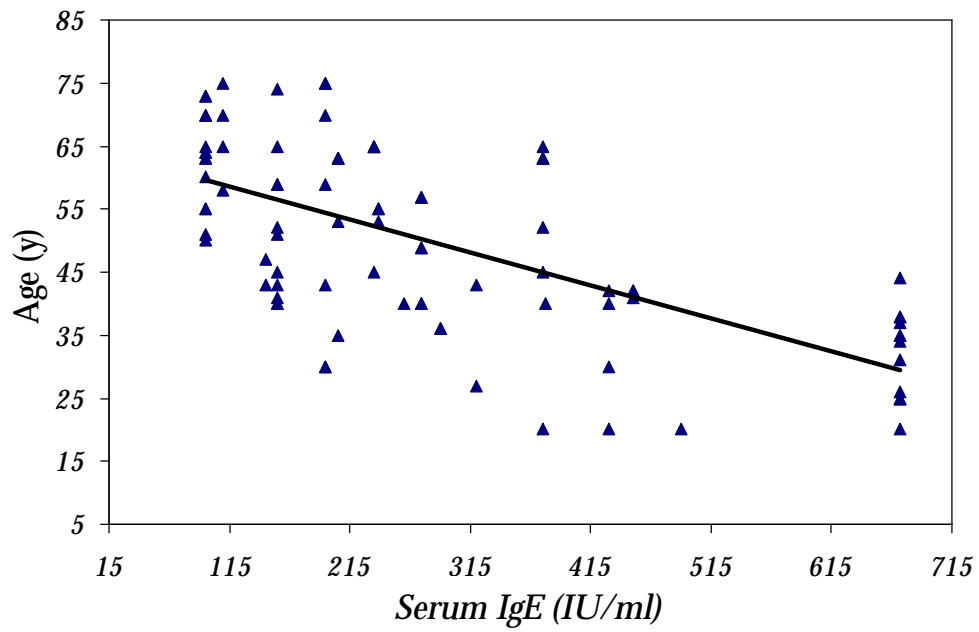


Fig1. Correlation of serum IgE concentration with ages of ; A: Asthmatic patients, B: Control group

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